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ABSTRACT

This paper gives an account of the use of the CoSy conferencing system in an introductory information technology course at the British Open University in 1988. A discussion of the integration of the CoSy system into the existing curriculum is followed by descriptions of the conferencing environment and the interface to CoSy. Profiles of students and teachers involved with the course are also provided. The nature and amount of use of the CoSy system are then examined in light of eight original expectations regarding convenience, increased access to help, equal access, CoSy as a new learning medium, social needs, the conceptual model of conferencing, technical difficulties, and variations in moderating styles. Both quantitative and qualitative data are presented for each of these areas. The paper concludes with a final evaluation of the data from four perspectives: (1) the value of computer-mediated communication for students; (2) the implications of its use for tutors; (3) the integration of this medium into the Open University's distance learning package; and (4) the impact of computer-mediated communication on the organization of the university. Appendixes include an electronic campus map; demographic data; and data on students' past experience with computer-mediated communication and their level of use of the technology during the course. (GL)

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The use of Computer-Mediated Communication for Distance Education at the Open University, 1988

Robin Mason

CITE Report No.56

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September, 1988

The Use of Computer-Mediated Communication for Distance Education at the Open University, 1988

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Introduction

The Open University purchased the conferencing system, CoSy, from the University of Guelph, Ontario, in 1986 for use on the proposed course *An Introduction to Information Technology: Social and Technological Issues.* This paper gives an account of the experience of using CoSy on this course in its first year of presentation, 1988.

The largest portion of this course, as with all major Open University courses to date, is the print component of seven 'blocks' of material.[1] These are enhanced by a Course Reader, audio and broadcast media and other supplementary materials.

However, in addition to these 'standard' presentation media, this course is one of the first to require all students and tutors to have an IBM compatible micro computer in order to gain practical experience of the social and technological issues discussed in the written material. Four software packages are introduced on the course, some commercial, some specially developed at the OU: word processing, database management, spreadsheet analysis and communications. Altogether, this practical component of the course comprises 20% of the work, and the communications element is, therefore, a very small part of the whole.

The Integration of the Communications Medium

A number of steps were taken to prevent this small communications element from being perceived by students as an added extra, which could be ignored if necessary. Open University students resemble many other students in tending to be 'assignment driven'. Moreover, OU students have the additional motivation that their course work assignments, in contrast to the usual practice in British universities, count for 50% of their final mark on the course and that working at a distance as they do, their written assignments form their main means of contact with direct personal teaching. They tend, therefore, to be highly conscious of what their tutor requires in assignments. Furthermore, many of them feel isolated as distance learners from an academic environment, especially in courses such as this which have no summer school. These considerations helped in integrating computer communications into the course as a vital and exciting component.

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[1] See the Course Guide for details of the course components, content and structure.

In the first place, the communications package is used not only as a piece of IT software to be understood, experienced and mastered like the word-processor, database and spreadsheet software, but it is also exploited as part of the tutorial support on the course. The 14 hours of tutor contact allocated to the course were divided approximately in half, with 3 face-to-face meetings during the course, and tutor support on CoSy throughout the course, especially before the due dates of each of the 7 assignments.

The second integrating feature of the communications element in the course was the design of the project, in effect, a double weighted essay which would assess all the practical elements of the course. The subject of the project is an evaluation of computer-mediated communication, based on the student's experience of it during the course, the textual material presented in the units and readings, and the reactions of fellow students. The latter information can be gathered directly from conferencing messages, but is mainly drawn from a database formed by all students uploading answers to 2 detailed questionnaires concerning their reactions and use of the conferencing system during the course, supplemented by questions on their own personal and educational backgrounds. Students are expected to download data and combinations of data from this remote database, present it in graphs and tables using the various software packages and write an assessment of some aspect - social, educational or technological - of computer-mediated communications.

The Conferencing Environment

One of the initial difficulties in conveying the potential of computer conferencing is that it combines elements from a number of communication modes in such a way as to form a unique medium which doesn't replace or directly compare with any other single medium. Consequently, students were presented with a metaphor of an Electronic Campus, as a mental model on which to base the facilities and design of the conferencing provision for the course.

The conferencing system, CoSy, provides three areas for different kinds of communication.[1] The electronic mail facility is immediately obvious as a one-to-one, personal mode. The conversation area is pictured as an unstructured, informal grouping for discussions amongst a few colleagues. The conference area is designed with many more facilities to allow interchange among any number of participants. The student, with a communications notepad in hand, can partake in many kinds of interactions from the personal to the public, from the social to the academic, from the interactive to the purely informative.

Each tutor on the course was moderator of a conference for his or her tutorial group of up to 25 students, thus forming an on-line classroom to

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[1] Appendix 1 is the Electronic Campus Map as used in the course teaching material about conferencing.

discuss the assignments, practical work and course issues. These conferences were closed to other users in order to create a contained discussion area where students, having met at face-to-face tutorials, would feel confident to participate.

A read-only conference was set up for the course team to provide up-to-date information, stop press announcements and fixes for software bugs. Students could read these messages but not add comments.

Tutors were given a closed conference, which was a private space for them to discuss tutoring issues amongst themselves and provide feedback to the course team on the course generally and conferencing in particular. Students, likewise, were given a conference for socializing, a place to 'meet' others on the course with similar interests, to moan about course problems and to chat with other students.

Rather at the last moment, a forum conference was added where course issues could be discussed by all students, tutors and staff. Topics for each of the seven blocks were created, as well as for the project, practical work, errata and gremlins!

Although the conferences for the course were all prefixed with DT200, which is the number designated by the administration for the course, all of the open conferences on the system were available to students. The university does not operate separate systems for staff and students, so all staff with IDs on CoSy are contactable by students.

The Interface to CoSy

The conferencing system CoSy, was originally designed for access by on-campus terminals, with no connect charges for students - a different situation from the distance learning environment of OU students. With the Open University's launch of the Home Computing Policy, students were expected to purchase (at favourable rates) or rent an IBM compatible PC with printer - a work station - to use in their own homes. The course team felt that this remote access by students required an interface which would provide automated log-on facilities and an off-line editor for the preparation of messages and reduction of connect charges.

Most applications of computer conferencing to date have placed great importance on an initial face-to-face meeting where users can be introduced to the basics of electronic communication generally and the structure of the particular conferencing software. As this kind of hands-on experience would not be possible, a third facility was introduced to the interface - an optional menubar to help new users remember the commands and available activities.

This 'front-end' to CoSy was designed and produced at the Open University for use with the Pace Linnet Modem, which was sent to each student for the duration of the course. The interface consisted of an automatic dial-up and connection through to CoSy with a few key strokes, an off-line editor and an optional menubar when on-line.

The Student Profile

The number of students who made a final registration for the course was 1364. Present indications are that about 100 to 150 of these have dropped out - quite low for distance learning courses. Disappointingly few students were female: 1006 males to 358 females. About half the students are aged between 30 and 40; the other half ranged from 21 to 'over 66'.

The educational and occupational background of the student population was biased toward the technical, clerical and managerial, despite the fact that this course was developed jointly by the Social Sciences and Technology Faculties, with a major contribution from the Institute of Educational Technology.[1] Almost twice as many students had taken the Technology Foundation course as had taken the Social Sciences Foundation Course. The number of students from the caring professions of medical and social services, as well as the number of housewives, are considerably lower than is standard for other social science courses. However, the range of educational and occupational backgrounds is very wide with over 5% having no educational qualifications at all prior to their OU study and over 12% already having considerable experience with electronic communications.

In terms of the computer communications for the course, there were very regrettable levels of disadvantage built in to the system. The OU operates a network of 13 answering modems in regional offices throughout the country, providing local call rates for students living near these areas. Despite considerable efforts to provide similar rates for all students, one third of the students were required to pay long distance charges for all electronic communications (b or b1 band). In fact, only half of the students were within local call distance of the nearest dial-up node and an intermediate charge (A band) applied to just under a quarter of them. Those living in the most remote areas of the country, who, it could be assumed, would most benefit from increased access to communications, were most disadvantaged.[2]

Fortunately more than two thirds of the students had the facilities to have their computer workstation permanently set up, but that leaves a significant number who either had to pack up the machine after each use, or did not have free access to their machine at all times.

The computer literacy of the student population on the course ranged from about 20% with NO experience with micros, to half with word processing skills. Many were games players or business package users.

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[1] See Appendix 2 for a breakdown of students by occupation and previous educational qualifications.

[2] See Appendix 3 for a map of the country showing the different call charges applicable.

Although at the start of the course by far the majority of students felt positive about using computer-mediated communications to increase the amount of communication they had with other students on the course, nearly one third of them at that stage felt nervous or lacking in confidence about taking part.

The Tutors

The 65 tutors hired part-time to provide support, mark assignments, take face-to-face tutorials and moderate the on-line tutorials were drawn from social and technological backgrounds. In fact, the majority had computer experience of one kind or another, but about half a dozen were not 'computer literate'. Almost all of them came to a briefing weekend held a few months before the start of the course, where they were introduced to all the software, the assignment strategy and the course content. Although a few of them were experienced computer conferencers, most were complete novices. Hands-on experience was offered at the meeting as well as discussions about the possible uses of educational computer conferencing on this course.

It was discovered through interviews,[1] that a good many tutors had volunteered for this course expressly because of the conferencing element. Indeed, interest in this new teaching medium was encouraging right from the beginning. A number of tutors were eager to explore the potential of computer conferencing for greater discussion, for cooperative work and even for peer assessment.

Suggestions were made that tutors with varying areas of expertise join forces through electronic communication to provide support for each other in covering the wide range of the course. Tutors were also briefed on the importance of good moderation of their tutor conference - putting up introductory messages, providing lots of encouragement and giving direction to discussions. The 'senior common room' conference, called dt200-tut, set up for tutors on CoSy continued the exchange about moderating and later on, provided a vent for a number of tutors to express their frustrations with the course and with conferencing.

Assumptions about the Use of CMC at the Open University

When asked to anticipate the outcome of the first year of this unique undertaking before it had even begun, the following 8 assumptions were recorded and described by the author, in consultation with the main proponent and champion of computer conferencing for the course, Tony Kaye. One year later, they form an excellent framework from which to build an analysis of the actual use made of CoSy by the first intake of students.

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[1] 15 tutors from all over the country were interviewed before the start of the course - some were experienced OU tutors, others were not, some had a stronger social science background, others a stronger technology background.

1 Convenience

Computer conferencing is a method of interactive communication which uses the written word typed into a computer. The computer stores the inputs of the members of the conference and allows any member to read and add to the flow of the conversation at any time. So, unlike spoken exchanges, the participants do not need to set a specific time for everyone to take part; a discussion proceeds with participants logging in 'asynchronously' and making their contribution to the developing argument. The first assumption is therefore that students would find conferencing much more convenient than traveling to face-to-face tutorials to meet their tutor and fellow students. In some cases they might even find conferencing, or the private electronic mail facility within it, more convenient than telephoning their tutor who may be busy or out when called. Tutors might find they could answer a common query once in a conference which all their students could read, rather than many times to individual students.

2 Increased Access to Help

Obtaining help and feedback when needed, is considerably more difficult for distance learners than for students on a traditional campus, with ready access to tutors, colleagues and good libraries. Computer conferencing allows students to raise questions and queries, and receive replies and suggestions from other students as well as from the tutor. Furthermore, this facility is, in principle, available 24 hours a day for the duration of the course. Course team members and support staff from the Academic Computing Service can also respond to questions and offer assistance, and so provide distance students with the broader support available to on-campus students. The second assumption about computer conferencing for distance learners, therefore, was that it would provide greatly increased access to help and expertise than was previously available to them.

3 Equality

The unique environment of a conference, where gender, race, physical appearance and body language are not apparent, concentrates the communication on the content of the message. Although disconcerting for some, it is liberating for many others who may not respond well in face-to-face situations. In either case the conferencing environment tends to be relatively 'status-free': the teacher is not standing at the front of the class; in fact the distinction between teaching and learning becomes wonderfully blurred as students respond to questions of other students and receive comments from many others on their ideas. Research shows that students get many more 'turns' to express their opinions when tuition is offered on-line than face-to-face.[1] The

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[1]Hiltz, Starr Roxanne, "The Virtual Classroom: Initial Explorations of Computer-Mediated Communication Systems as an Interactive Learning Space", New Jersey Institute of Technology, 1985.

assumption was that many distance students would welcome the equal status of the conferencing environment and that greater use could be made of the previous experience of adult students.

4 New Learning Medium

At its most successful, conferencing offers the possibility for students to create a 'group mind', a flowing thought space which is more than the sum of the individuals' comments and can be sustained much longer than a face-to-face meeting. By frequent logging in and contributing of opinions, critiques, new ideas, the students build up a group working flow, which can have very exciting and worthwhile learning potential. Because conferencing relies on the written word, which is a more thoughtful vehicle for expressing ideas than the spoken exchanges of face-to-face meetings, students could prepare a considered response to the latest issues. A current of reflection would thus be established in a dynamic conference which is sustained over time by the asynchronous contributions of the participants. The model of learning which is transmitted by this experience is that of knowing by formulating ideas. It requires students to take an active role - to initiate, to comment on colleagues' work and to continually re-examine their opinions on the basis of extensive feedback. The assumption was that at least some distance learners would respond enthusiastically to this opportunity. Whether this medium positively encouraged the others to develop greater autonomy and self-direction in their learning was another, intriguing possibility.

5 Social Needs

Feedback from Open University students over the years shows that the lack of social contact and 'atmosphere' of a traditional university campus is sadly missed by some students.[1] Conferencing cannot, of course, entirely substitute for this, but it can provide a unique kind of contact and atmosphere. Students can put up on the system queries and statements of their interests - like casting out fishing nets - and 'meet' like-minded fellows or get information on their particular questions from the vast pool of system users. With both time and distance in suspension, a new pattern of interaction emerges, which is anything but the impersonal, cold contact that computers conjure up in the popular mind. Fellow participants seem, not tangible, but very much alive, recognizable, multi-dimensional personalities. Conferencing is unpredictable; it is unpackaged; it is serendipidous. The assumption was that this 'networking' aspect of conferencing could fulfill some of the social needs of distance learners.

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[1]Mason, Robin with Alistair Morgan, "The Rough and the Smooth - Students' Experiences of OU Study", Student Research Centre, Report No. 2, January 1986.

6 The Conceptual Model of Conferencing

The concept of electronic mail is very close, in terms of use and protocols, to ordinary paper mail. However, the concept of conferencing is not quite like any other mode of communication. The lack of time constraints makes it very unlike a face-to-face conference in which people sit around for a set time period to discuss something. No one has yet come up with a metaphor for the electronic conference which gives the uninitiated an image to which they can immediately relate. Conferencing has some of the characteristics of a face-to-face discussion, but is more extended in time as with an exchange of letters. Feedback hasn't the immediacy of real-time meetings, but can be built up through successive entries to have great impact over time. The style of conferences lies somewhere on the scale between the formality of the printed word and the informality of the spoken word. It feels intimate and yet it is public. This unique combination of already familiar models is compelling to some, but others find the lack of an easily identifiable metaphor unsettling and confusing. As with other experiments in computer conferencing, we expected that the mail facility will be very successful, but fewer students will become confident contributors to conferences.

7 Technical Difficulties

In addition to the barriers that some students have to taking part in electronic conferences, computer-mediated communication has all the problems of the technology itself to overcome. These include the robustness of the hardware and software, its ease of understanding by the novice and social protocols involved in using this new form of communication. Helping students through the initial learning stages to become confident users of the system remains one of the major preoccupations of any experiment with conferencing. Despite extensive collaboration and developmental testing of our hardware and software, we expected that a significant percentage of the students would experience so many technical difficulties, whether with the telephone lines, the work station or the conferencing system that they would abandon further attempts to use the facility. We suspected that a smaller percentage would drop out because they could not adapt their learning style to this medium.

8 Variations in Moderating Styles

The moderator of a conference is the person who sets it up and has overall responsibility for its direction. The personal style and skill of the moderator of an educational conference has, not surprisingly, a great impact on the flavour and success of the learning environment. Warmth, sensitivity and skill in handling group dynamics are required just as they are in face-to-face tutorials. However as conferencing is such a new teaching medium, little is known about how to devise appropriate conferencing tasks, how to effectively regulate on-line discussions and how to focus disparate students on the issues. With 65 tutors moderating conferences of 25 students, we expected a wide range

of teaching styles, some effective and some not. We hoped to considerably advance the available research on the relation between moderator styles and successful learning outcomes.

Actual Use of CMC: the First Year

The nature and amount of use made of CoSy in the first year will be examined in the light of these 8 expectations. Quantitative data used in the analysis are from 3 sources: systems-generated statistics for time on-line and amount of character input, the database of 55 questions answered by 75% of the initial number of students, and background information collected by the administrative arm of the university. Qualitative data come primarily from the messages sent to conferences themselves, but also from extensive interviews with students, tutors and OU staff at various points throughout the first year. Despite this plethora of data, many of the conclusions drawn in the following analysis are derived from the personal involvement and perspective of the author.[1]

1 Convenience

"'I see nobody on the road,' said Alice. 'I only wish I had such eyes,' the King remarked in a fretful tone, 'to be able to see nobody! And at a distance too!'"[2]

A series of questions about the convenience of electronic communications was included in the questionnaire for the course database. These show that about 60 to 70% of students returning questionnaires found conferencing LESS effective for contacting their tutor, getting help, socializing and saving time and money in travelling. Although this may appear to be an indictment of the convenience of electronic communication, a number of factors mitigate against this conclusion.

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[1]I joined the course team in Sept 1986, after the decision to use CoSy on the course had already been taken. I was co-author of the teaching material on computer conferencing and author/co-ordinator of the project questionnaire. After the course began, my on-line involvement included extensive Email exchanges with students, contributions to national and local conferences and sharing responsibility for the Coco ID. My personal perspective, however, is most strongly coloured by my interviews with tutors and students. I 'monitored' the progress of 15 students from two different tutor groups, by participating in their tutor conference, going to face-to-face tutorials and interviewing the students both prior to the beginning of the course and half-way through it. I also made a special study of the views of students and tutors in the Scotish region, though telephone interviews, specially arranged discussions, tutorials, and interviews with both low and high users.

[2]Quotations for each of the 8 headings are taken from Lewis Carroll, Alice Through the Looking Glass

First of all, these questions had to be answered by students, not at the end of the course as originally conceived, but in the middle of it. As any experienced conferencer knows, the start-up time in turning new users into confident and contributing members of a conference is notoriously longer than anticipated. With an opening date of March 25th, some students were logging on for the first time in July! (see Appendix 4) With this in mind, it is remarkable that nearly 350 students of the 875 who uploaded the questionnaire found conferencing as good or better a means of getting help or moral support as telephoning their tutor. Even more remarkable is that, at this point in the course with such a small proportion of the total presentation being on-line, nearly 375 students could say that conferencing was as good or better a medium for intellectual exchange as a face-to-face tutorial!

As might be expected, there is an association between use of CMC and attitudes on its effectiveness. The survey showed that use, as measured by number of successful log-ons was positively correlated with the proportion of students who found conferencing effective for getting help, socializing, saving time and money etc. Whether the the amount of use affected the attitude, or whether the attitutde affected the amount of use, is open to debate.

Secondly, it must be stressed that the range of student use of CMC on this course was very wide, with significant samples in all categories from total non-use, to minimal use, to more than the course requirements through to exceptionally heavy use (see Appendix 5). There is considerable qualitative data to show that students in the latter 2 categories certainly found the medium convenient. The following are a few illustrative examples among many.

CoSy message in a tutor group conference:

DT200-luton block,#4, pa-starling, 12-Jul-88

I've never been one to contact my tutor because I find it very difficult to disturb someone at home or at work with what might be a trivial point. I know they have elected to do the job but I still feel I might be inconveniencing them. Telephoning fellow students is even worse because (i) they are not paid and might not want to be bothered, and (ii) they might not be able to help. As a result I have studied previous post foundation units in relative isolation.....If I have problems I can log onto a conference and leave a message knowing that I am not inconveniencing anyone. Those who want to respond will respond and at a time that suits them. Further I may get several responses and hence a variety of views to my question.

Interview with Abdul Parker, June, 1988[1]

Q What difference has electronic communication made to you as a student this year?

A One of the things about conferencing is that you can describe your problem on the day you are having it, rather than storing it until you have a day school or tutorial. You have it out of your system, bang in an instant - throw it out at somebody or into the system.

The convenience of electronic communication applies particularly to the mail facility, which has been used both as a substitute for other forms of communication and as an additional medium to increase the 'friendliness' of distance education. Unfortunately the major shortcoming in the statistical data is the lack of any computer-generated statistics on the number of mail messages sent on the course. However there are indications both in conference messages and from interviews that a number of students have taken full advantage of this new ability to contact their tutor or other students.

Interview with Howard Webber, June 1988

Q When I talked with you before the course started you said that you would be very careful in how much time you would devote to CoSy...

A But I do use it a lot - from the mail point of view, and that I find very useful, much more so than the telephone.

.....

Q You keep saying you find Email useful ....

A Mainly because it keeps conversation short and to the point. It is also direct to the person concerned - no telephone tag. It really is efficient - you get good feedback from it.

Discussion with DT200 tutor Bob Peacock, August 1988

A I have a student in Her Majesty's Prison who sends me a mail message nearly every day.

Q About what?

A Oh anything really - little queries, comments on how he is getting on . . .

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[1]All interviews quoted in this paper were carried out by the author and permission has been granted by those interviewed to quote from them.

2 Increased Access to Help

"'We <u>can</u> talk', said the Tiger-lily, 'when there's anybody worth talking to.'"

There is considerable evidence to show that for those students who made any significant use of the conferencing system, the increased help available was highly valued. The database answers confirm that of all possible sources of help (tutor, fellow students, spouse, Academic Computing Help service, other people) the messages on CoSy were rated as the most valuable. (see Appendix 6) The 'gremlins' topic, where students were to report practical problems was the first conference to take off, with over 500 messages generated in the first 3 months. A number of students and tutors took a very active part in supplying 'fixes' for the many difficulties reported there. Indeed, these active participants were in most cases considerably ahead of the course team in providing useful advice and support to students. This topic was outstanding as a vehicle for those with expertise to become known on the system and to offer the benefit of their experience to the course team and students alike.

Exchanges about practical, computing matters are a popular and useful topic on most electronic bulletin boards and conferencing systems. Helpful exchanges about more theoretical subjects are another matter altogether. This issue of the quality and degree of help available through electronic communication is a critical one and will be analysed from a number of angles.

First of all, the direct availablility of members of the course team to answer queries, to provide advice on practical difficulties, and to initiate and participate in discussions about the course material is unprecedented in the history of the Open University. At least 9 staff members involved in the design and writing of the course were active participants in conferences and responded to direct mail from tutors and students. A systems ID, called Coco, was set up to which students could direct their queries. During the first 3 months of the course, Coco was handling 20 to 30 messages a day and replying to queries usually within 24 hours. Contrary to initial fears that students might 'take advantage' of this unique access to the course designers, there were frequent expressions of gratitude and appreciation, but no abuse or unjustifiable use made of the facility. Other course team members contributed extensively to Forum topics, extending and developing areas of the course, and explaining and interweaving parts of the course material.

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dt200-forum/4, 180, aw_bates, 7-jul-88

Good - Pat and Richard are forcing me more and more on to the defensive. But Richard, what is it exactly that tutors provide in the OU system that could not be done by an intelligent machine? Let's suppose for

instance that you had a large mainframe, with a huge data-base, that stored responses to all known points raised by students, with a small team of central staff to pick up new points raised. Would that not do the job? And how do you know that I'm not a machine?

The indefatigable moderator of the Forum, Ray Thomas, made numerous attempts to stimulate debate on the technological issues of the course.

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dt200-forum/tma 215, r_thomas, 22-Sep-88

TITLE: TECHNOLOGICAL ISSUES

It may be some consolation to dt200 students to reflect that it is not only within the course that there is a neglect of 'technological issues'. The problem seems to be that technologists think in terms of clients problems and technological solutions. Technologists are not interested in discussing technological issues with clients.

The current disk space crisis on CoSy is a case in point. the technological problem, in so far as it has been identified, is that CoSy is all on one file and that file has been put on a relatively small disk which also contains other files. That was last years technological solution. This year a shortage of space for CoSy becomes apparent. But the problem is presented as belonging to users. The conferences are wasteful of space. There is a need for tidying up. Moderators should be more ruthless with deletions. And of course there is a lot of discussion of a'sociological' nature.

But there is no discussion of the technological issue of the problems of dealing with last years technological solution. There is no shortage of disk space on the VAX system - only with the CoSy file.

Secondly, the contributions of various tutors also added considerably to the expertise and advice available in the Forum conference. Furthermore, the sheer number of students on the system meant there was a very good chance that someone would answer any query.

dt200-forum proj, 227, cm-johnston, 2-sep-88

I have gained confidence as the year went on because, if I got stuck, it was highly likely that someone else had already entered comments which were relevant. This has been the greatest bonus for me and I can fully understand why so many browse or lurk in the system. The information is so readily available for all. I've spent a fortune in phone bills but it has been worth every penny! We really cannot assess just how effective CoSy is but there are absolutely no doubts in my mind.

With the notable exception of a few discussions initiated by staff members, the help and expertise available on the system were of the 'one or two message' variety. There was very little extended discussion of relevant course issues. It was certainly envisioned that students with a social science background would provide help and support through CoSy to more technology oriented students and vice-versa. Although there was considerable discussion on various Forum topics about the alleged social science bias of the course and the difficulties which technology students were experiencing with writing the assignments, there is little evidence that CoSy did more than offer a space for students to moan about these problems. The hope that students would pick up 'the language of the discipline' or deepen their understanding through discussion of areas in which they had little background seemed to go largely unrealized.

3 Equality

"'I don't know what you mean by <u>your</u> way', said the Queen; 'all the ways about here belong to <u>me</u>'".

Inequalities in the cost of accessing Cosy and technical difficulties preventing access are acknowledged and regretted by all those involved. Furthermore, for whatever reasons, students made very unequal use of the system as is shown in Appendix 8. In certain other respects, however, the use of CoSy increased students' ability to participate equally. For instance, the status and personal appearance of users are not evident on the system, so students who work 'unsociable' hours or are housebound, were suddenly able to take as much advantage of what was offered as other students. Disabled students were not identifiable as such and tutors were not distinguishable from students by their ID. The peculiarly personal yet detached atmosphere of conferencing obviously encouraged many students to express their opinions, whether positive or negative, and to contribute information from their previous experience, with all the hallmarks of equal members of a group. The feeling shared by some students and tutors of being involved and even influential participants, rather than passive recipients of a course, has played its part in sparking real enthusiasm for the course. CoSy has also been a vehicle for open criticism of course material, and vigorous complaints

and outright condemnations have appeared in conferences for all to read. The impact of this direct feedback to the course team has perhaps not had tangible effects as yet, but the feeling of real accountability is much stronger amongst those of the course team who participated in the electronic communication than those who did not.

Statistics from the database confirm the fact that students did appreciate conferencing as an 'equal opportunity' medium. Nearly 500 of the 875 who answered the question agreed with the statement that "individuals can participate more equally in electronic than in face-to-face communication."

4 New Learning Medium

"'You may call it 'nonsense' if you like', said the Red Queen, 'but I've heard nonsense compared with which that would be as sensible as a dictionary'".

By far the most significant and unexpected outcome of the use of CoSy in the first year was the lack of significant activity in the 65 tutor conferences and the nature and amount of activity in the 'national' conference, Forum.

Appendix 7 shows the number of messages by the end of the year in each of the course conferences. The variation in usage of the tutor conferences is in most cases the result of Herculean efforts on the part of the tutor to stimulate discussion or to copy messages from other conferences. Some of the conferences with the highest activity have had contributions from 5 to 10 students, but in almost all cases the content of messages has been on the level of information exchange, rather than of discussion, opinions, comments or critiques.

The first fact which must be made clear about participation in the Forum is that only 26% were contributors and about 53% read or scanned some portion of the messages. Of course there were students who took to the medium immediately; others who grew into it, but undoubtedly many who never used its potential for directing their own learning.

Mail message from tutor Colin Shaw, 17 Aug 88

I really don't know about the high level of lurking, yes its there but I find it slightly irritating, almost as if the students are using me. I feel that they are being too passive and that they are like great vacuum cleaners of knowledge sucking up all the little tip bits. I am inclined to think that it is because they have adopted a student stance, have become purely passive learners. Perhaps the way they use CoSy is as much to do with the education system as anything but that is one of the angles that I am working on,

> trying to challenge their assumptions about what a student should do and what a tutor should do.....

A number of messages from students on CoSy present a different view of the practice of 'lurking', that is, reading without contributing.

> dt200-forum proj, 240, d-reeve, 5-Sep-88
> ---
> CMC has its advantages too - it provides access to a wider group of people than is possible in local groups. I personally, though not contributing very much to CoSy, have found answers to problems with practical work. When stuck over a problem, I could log on and try to find a solution. This can be done at any time whereas it may not be convenient to disturb a fellow student at midnight!

The Forum consisted of many topics: there was one for each block of the course, one for the project, for practical work, for the assignments, for gremlins and several others added as the course proceeded. In the early stages there were many messages which were garbled, in the wrong place, completely irrelevant or glib. These diminished with time and the topics came to be dominated by about 100 regular contributors (students, tutors and staff) with new students making a first appearance at frequent intervals. A very rough indication of the level of contribution, lurking and complete withdrawal can be seen in Appendix 8.

The reasons for non-participation in the Forum, which are derived from interviews and messages on CoSy, are relevant to this analysis primarily as a focus for understanding the nature of the use that was made of it.

(i) Lack of time is a constant cry from OU students about their non-use of many course facilities. There are indications that this course - a full credit course specifying 12 to 15 hours of work per week for 34 weeks - was 'overloaded' with readings, and new software to learn at regular intervals. By far the majority of students on the course were in full time employment and most were married and had children.

(ii) Although students were instructed in the use of CoSy in the second block of the course, there were no specific requirements to log on after that. The project, which was to be handed in near the end of the course, could in theory be completed with a minimum of actual use of the system. Indeed, frequent logging on by students was never envisioned by the course team and regular contributions from all 1500 users would, if it didn't crash the system, certainly have overloaded the conferences by producing more messages than anyone could handle.

(iii) As it was, the volume of messages in the Forum conference for all but the very frequent and regular users was very difficult to manage.

The tools within CoSy to manage large conferences - the skip command and the list headers command, read by reference and so on - really do not address the problem of the infrequent user wanting to get information efficiently, let alone contribute to a discussion.

(iv) The nature of the messages in Forum on the whole offers a broader rather than a deeper understanding of the course issues. Students with considerable expertise in certain areas of Information Technology contributed sometimes long and complex messages which gave a wider perspective on many areas of the subject, but very few messages tackled specific course issues.

(v) The sense of addressing a large public audience certainly prevented a number of students from contributing to the Forum. The intimacy of the tutor conference, where the other participants were often known from face-to-face tutorials, had more appeal to those who shied away from this degree of exposure. Related to this shyness, was often a sense that such public utterances should be polished pieces of work, or at least that some of the messages already in the Forum were above their level.

The following comments from interviews illustrate these points from the student perspective:

John Kemp - "I would like to have gone into it a lot more - look at a lot more of the conferences. But partly it is lack of time and partly if you join a conference with hundreds of messages it is hard to find out what has happened and what has been said before. I was looking for something on modems in Forum/gremlins and after 3 weeks there were 200 messages! I did a search on 'modems' and there were still 60 messages! If people would get rid of outdated stuff it would help."

Deanne Seymour - " There seem a lot of people with axes to grind, particular things which interest them which they put into the conference which aren't really relevant to the course at all. Sometimes they are interesting to read. But it is pretty much pot luck - you don't know what you will get out of them."

Linda How - "I found the early messages in Forum a bit high-flown. I wasn't really sure what they were getting at and what relevance it was. It was in the category of 'nice to know'. It might be quite useful to pick something off there and include it in your assignment. I don't know - to get the full picture you need the comments on the message because that is where the discussion takes place. It can actually take quite a while to get the complete picture and put things in perspective."

Sarah Bamford - " There is an awful lot packed in, so if you don't move on you get behind. I like the facility of CoSy; I enjoy doing it. I quite like it as an entertainment factor. I like putting in a message and getting a response very quickly. But it is not really helping me get on with the course."

John Gouff - " I know you can skip backwards and forwards - but you are making the decisions blind. Quite often I jump to the last 10 messages, but I don't know what I have missed. There might have been something

really important or really interesting. Really the person who puts things in, or the person who is managing it, is in the best position to extract things that are no longer important."

Iain Robertson - "It is like coming into a dinner party right in the middle. You can see people have been talking about something and you feel, 'what am I doing here?'"

Comments from student assignments submitted to tutor Dave McConnell -

"I have a reluctance to join in conferences other than DT200-Cotswold, I'm not sure of the reasons but I think it may be a combination of not being able to put names to faces and the content of some of the conferences is either too highbrow or inconsequential rubbish".

"Before we started I had naive visions of vast amounts of stimulating conversations going on, unrestricted by geographical distance or by only having occasional tutorials at which to meet. By and large this has not happened and I have learnt that electronic communication is both hard work and time consuming. There is also concern about social isolation produced by the new technology, the electronic communicator can spend a large part of his or her time physically alone, neglecting the family and perhaps having little time left over for face to face social interaction".

5 Social Needs

"'Have you invented a plan for keeping the hair being blown off', Alice enquired. 'Not yet', said the Knight,' but I've got a plan for keeping it from falling off.'"

The social needs of distance students are comprised of a number of different elements. The question in the database was perhaps too narrow to encompass this range and this may explain why the statistical data from it are not confirmed by the qualitative data. Only 157 of the 847 students said that conferencing was as good or better a means of 'socializing' as a face-to-face tutorial. However, evidence from CoSy messages and from interviews shows that conferencing met many social needs of students - even of those who were infrequent users.

The psychological effect of having the facility to contact the tutor or get help electronically was strong for many students, particularly those who made minimal use of CoSy:

Interview with Arthur Haynes, June 1988

Q Has the ability to contact other students, you tutor or the central staff made any difference to you as an OU student this year?

A Oh yes. I don't feel anywhere near as isolated. I did T301 last year and was very very much on my own. I don't feel anywhere near as isolated this year. I could have done with conferencing last year.

Q A psychological feeling or an actual fact that you can and do contact other people?

A Both, though possibly more that I could if I needed to.

Students who 'lurked' in rather than contributed to conferences felt reassured on one of the most frequently cited drawbacks of distance learners - not being able to assess their progress in relation to other students.

Interview with Deanne Seymour, June 1988.

Q Would you like to see more academic discussion in the tutor conference? or do you find that the social function is beneficial in itself?

A In itself yes, I think it is beneficial. I have never felt so comfortable doing an OU course before. But yes, we should be discussing more of the course I'm sure. I think we are wasting the opportunity.

Q To what extent is your comfortableness due to CoSy?

A Quite a lot. You see you can struggle on your own in a course and think you are the only person who doesn't understand. Summer school is usually the time when you realize everyone is in the same boat. Here you realize that very early on - that people are struggling over certain parts of it.

The most common social need which conferencing fulfilled for students was the desire to be 'in touch' with others on the course. Being part of what is going on, feeling in contact with the 'people who designed the course' and alleviating the sense of isolation are all mentioned by students in interviews and CoSy messages.

DT200-forum/4,139, h-gibson, 4-jul-88

CMC has allowed me to share the experiences and to 'listen to' the views of many more students and tutors than I would ordinarily meet at course tutorials. I would think that at this point on the course - just over half way - the CoSy Experience adds up to much more than the TOTAL of all tutorials that I have attended on four previous courses. Despite the medium's inability to transmit the smiles (and glares) and other non-verbal speech parts enjoyed in face - face, I still feel more

> involved and a part of things than I have done on other courses. CMC, as implemented on this course, is one giant step toward removing that feeling of being 'on your own' suffered by OU students, certainly by me.

The conversation facility was also used by students to chat more informally. Fifty-two conversations were set up containing anywhere from 2 to nearly 1000 messages.

6 The Conceptual Model of Conferencing

"'Now here you see, it takes all the running you can do, to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that'!, said the Queen".

Two questions in the database deal specifically with the ability and speed with which students mastered the concepts of mail and conferencing. The responses prove the initial assumptions that conferencing is much more difficult to master than electronic mail. (see Appendix 10 for the database responses) During interviews, it became apparent that some very infrequent users had a hazy idea of the structure of Cosy, that of a number of separate conferences made up of topics, and of the difference between the local tutor conferences and national conferences, and a confused notion of the nature of the communication appropriate for conferences.

Interview with John Franklin, June 1988.

Q How do you feel about contributing to your tutor group conference?

A I suppose first of all I think, let's see what everybody else has done....then it is a problem - I am so used to working on my own, I'd have to really think, what could I contribute. It is not a fear of giving away information.....

Q You mean it is a matter of figuring out where to come in from?

A Yes, and what amount of effort to put into it.

This student's lack of certainty is a reflection to some extent of the ambiguity of the status of conferencing on the course. Strictly speaking, Cosy was a piece of software for students to experience, plus a half-time substitute for face-to-face tutorial support - in short, no more than 5 % of the course. Nowhere was it specifically spelled out as a teaching medium or a vehicle for course presentation. Its use was 'built into' the course through the project and yet its major potential as an educational tool was never exploited. Had it been conceived as a teaching tool, the whole environment would have had to be structured differently. As it was, a number of staff enthused by the response in Forum did gradually

begin to exploit its educational potential[1], but this was more of an afterthought than a pre-planned activity. Those students, tutors and staff who took an active part in the Forum conference engaged in it considerably above and beyond the 'call of duty'. This ambiguous, changing nature of the national conference did not help the weaker student cement a firm concept of the value and appropriate content of messages.

The structure and purpose of the tutor conferences, however, was laid out more specifically, and yet they suffered greatly from lack of contributions. The database questionnaire shows that 80% of students felt comfortable about sending mail but only 45% felt comfortable about contributing to conferences at the time of the survey. Each of the 15 students interviewed, was asked why they hadn't contributed more to their tutor conference. Despite a wide range of actual time spent on CoSy by the sample, all students blamed lack of time as the reason for lurking rather than contributing. Some admitted that they felt guilty about reading without writing messages and others exclaimed in disappointment at finding no new messages in the conference. This constant refrain begins to sound like noise generated to cover a more basic cause - the lack of a clear model on which to base their conception of how to participate.

In any group of 25 students, about 5 were regular contributors and this was insufficient to generate discussion. Whether the tutor has a direct teaching role or merely a supportive, facilitating role is another ambiguity within the OU. However, to suggest that this in any way contributed to the almost complete lack of academic discussion in the 65 tutor groups would be missing the point. For the average student on this course logging on relatively infrequently, the effort of remembering how to operate CoSy and the difficulty of coping with the large backlog of unread messages, meant that the 'return' on their time was simply not high enough to justify or encourage further exploration or contribution to the medium.

Conferencing did not have a high enough profile on the course to be a medium for discussing course issues in depth. The fact that interesting and worthwhile interchanges did take place on the Forum is a tribute to the medium and to the people who took part.

7 Technical Difficulties

"It"s a poor sort of memory that only works backwards,' the Queen remarked".

As with other aspects of this study, the range of student experiences was wide. Some students experienced no difficulties with their workstation, had no trouble making the connection to CoSy and worked through the teaching material about electronic communications without a hitch. In

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[1]See Appendix 9 for a content analysis of the forum topic on block 4 of the course.

fact, despite bugs, complaints, totally inexplicable technical failures and unforseen happenings[1], there were actually fewer technical difficulties than the pessimists anticipated. Appendix 11 shows the number of difficulties experienced by students at the time of the survey on a range of technical areas: the modem, the OU dial-up network, the host machine and the lines through to CoSy. Appendix 6 shows which sources of help students turned to and which they found most useful. The list of possible sources of help was clearly inadequate as the largest source of help was given as 'none of the above'.

One of these 'unknown' sources of help was certainly course team members and particularly the chairman, Nick Heap.

Interview with Nick Heap, May 1988

A From my point of view, the last time I logged on I had 25 mail messages, accumulated over 10 days. That is an average of 2 and 1/2 messages a day.....I have been beseiged by phone calls at the rate of 5 a day for the last 5 or 6 weeks.

Q How usual is it for a course chairman to have that level of queries directly from students?

A Well it is horrendous. They were all queries that everybody else had filtered down because they couldn't answer them! I have only been a maintenance chairman and I have never had this.

Q Surely most of this is caused by the fact that you are the only person on the course team who can deal with these queries.

A Sure, but it also gives me a rather distorted view of what is going on. Unless I can say to myself, this is the bottom pile of rock I am getting, then I would have to conclude that the course is in a mess! I don't believe it is, because the level of inquiries that we are getting is far too small for the course to be in a mess.

There is no doubt that the level of difficulties in the first 2 months of student access to CoSy was hard to manage. The gremlins topic in Forum proved invaluable as a place for students to register their problems, as well as for other students and tutors to offer advice. The 'comment' facility within CoSy, whereby a message related to a previous message can be linked directly to it, was particularly useful in this context. The return on temporary contract of the original programmer of the communications software, Ben Hawkridge, to work through the 500 messages in gremlins helped to relieve the strain on the course

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[1]For example, the time-out on one of the important menubar functions, which was set to work perfectly before the course, became far too short with 1500 new users. Secondly, the number of students (over 150) with harddisk machines requiring unique software was far greater than anticipated.

chairman. As a result, messages were put into the read-only news conference offering the best fixes for a number of the software bugs.

Although students continued to experience technical difficulties, some of which seemed invulnerable to solution, the level of queries subsided and many were 'handled ' by other students on Cosy.

The Academic Computing Service has for many years, provided a telephone help desk on weekdays and Saturday mornings for courses with a computing element. This service offers diagnostic assistance on the physical use of equipment and the operation of software. A trial extension to the service was added for courses under the Home Computing Policy to include coverage on the 7 weekends before the course began - primarily to answer questions about setting up machines and preparing disks. In total the Service registered 1396 calls from students. Appendix 12 shows the range of queries from students in the first year of this course, and also that DT200 students were the most consistent users of this advisory service. Feedback from students, on CoSy and in interviews, indicates that the service was invariably curteous, though not always able to address the problem.

Inability to access the host computer at Milton Keynes, was one of the persistent problems which frustrated students. Faults on the network account for some of these, as the 17 mux are not monitored on weekends and holidays - when of course students are most likely to want access. Poor telephone lines also account for some of the problems. Perhaps most frustrating of all were those which could not traced or explained.

Though not within their remit, tutors also received calls for help from students. OU students often feel more comfortable about contacting their tutor than other 'faceless' people at the centre. The database shows that of the 80% percent who turned to the tutor for help, only 45% percent found the tutor most helpful. Indeed many tutors were as unfamiliar with the workstation and with CoSy as the students.

A most useful statistic on the issue of technical difficulties would be the number of students who 'gave up' because of technical problems - either in the sense of abandoning the course entirely or attempting to pass with little or no access to CoSy. These statistics will be difficult or impossible to obtain without considerable follow-up investigation and interviewing. Most students who abandon their OU studies say that they do so for private, personal reasons - lack of time, rather than an inability to cope with the course material.[1] The normal drop-out rate on a second level course such as this, is about 20% of finally registered students. On this basis, therefore, one could guess that about 5 % might have given up the course because of technical difficulties.

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[1]Woodley et al (1987). Choosing to Learn: adults in education. Milton Keynes: SRHE and Open University Press, p. 160.

8. Variations in Moderating Styles

"'...If you only spoke when you were spoken to, and the other person always waited for you to begin, you see nobody would ever say anything,' said Alice".

Though the major disappointment of the use of CoSy was the lack of success of the tutor group conferences, a number of interesting results have emerged. (see Appendix 7 for number of messages in all 65 tutor conferences)

First of all, tutors who continued to input messages - cajoling, informative, chatty or substantial - produced the largest number of messages. Tutors who put in opening messages in each topic and then expected students to carry the ball were disappointed.

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dt200-tut eval, 32, b-lucas, 8-jul-88

.....I have a topical-reading topic, which contains a number of gleanings from the computer freebies, of possible interest and occasional amusement, but not essential for the course. I was hoping this and other topics such as chat would encourage students to try CoSy among their town group before having courage to try the national conferences.

I believe this has had moderate success, since those few of my students who are now contributing nationally started on the town conference, and are still more fluent there. I have tried to make it fun as well, by my initial messages such as on the electronic massaging misprint, and "DT200 students do IT with a modem", but it was all left to me at first.

Secondly, as the pattern of 'quiet' tutor conferences and 'active' national topics became established, the local conferences became the place for information specific to the tutor group - dates of next tutorials or self-help group meetings, friendly chat messages like birth announcements, but most usefully, information about assignments. During the two postal strikes which occurred in June and September of the first year, CoSy proved a vital medium of exchange amongst students, tutors and the course team. Many tutors provided a service much appreciated by students of summarizing the good and bad points found in each batch of assignments and giving the range of marks for the whole group. Individual students were Emailed with their own results. Some tutors joined students from completely dead tutor group conferences to their own conferences and other tutors provided a real 'time and cost saving' service to their students by copying the most important messages from the national conferences into the tutor group conference. Students in

these tutor groups, therefore, did not need to go beyond their local conference to access all vital information.

Thirdly, the idea of an intermediate area between the local and national levels developed as a result of the under-use of the one and the over-use of the other. Providing a regionally based conference of approximately 150 students, it was hoped, would catch enough frequent users and attract a few of those who were daunted by the enormity of the national conference to produce a lively but not overwhelming discussion area for course issues. After consulting students and tutors about this idea via Cosy, it was discovered that the regional conference should not replace the local tutor conference but merely supplement it. This pattern is now to be adopted for future presentations of the course.

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dt200-tut eval, 59, b-sanderson, 11-Sep-88

TITLE: FEEDBACK

We in Cumbria had our last face-to-face tutorial Sat. 3rd and I would like to report on a few points which were brought up.

CONFERENCES - General feeling that a local conference was still a good idea as it was VERY much less intimidating to start on, but probably only need one or two topics - TMA and chat.

I too have found this restricted conference great for giving rapid feedback on TMAs (assignments). I send individual email messages for marks and a detailed general conference message for comments.

Apart from confirming research finding from many sources [1] that moderators need to provide continual support - either in encouraging users to participate or in directing a well established conference, little in the way of new findings about moderating styles have resulted from this very large application of computer conferencing. The reasons for the disappointing quantity and quality of tutor conference messages, however, are related to the nature and place of CoSy on the course, rather than the moderating styles of the tutors.

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[1]Brochet, Madge, "Effective Moderation of Computer Conferences. Notes and Suggestions," Computing Support Services, University of Guelph, 1985.

Feenberg, Andrew, "Computer Conferencing and the Humanities", Instructional Science 16: 169-186, 1987.

Conclusions

Four categories have been chosen in which to present a final evaluation of the many findings detailed above. These four are: the value of computer-mediated communications for students, the implications of its use for tutors, the integration of this medium into the OU's distance learning package, and finally, the impact of CMC on the organization of the university.

The students' viewpoint

The fact that so many students were exposed to this rapidly expanding field of communications technology, and that so many were able to jump through the hurdles of its use, is justification enough for its place on this course. The value of computer conferencing as a tutorial support has also been established in this first year, and were the costs involved in supporting all students in this manner less problematic, it could certainly be recommended as an ideal supplement to the telephone and face-to-face tutorial. Its benefit to students as a life-line to help, information, contact and exchange has been proven, though the cost of access for both students and tutors is a significant deterrent to its further development.

The educational exploitation, while never specifically part of the original intention for its use on this course, developed through the enthusiasm of a few members of staff and a minority of the students. The potential of the medium for presenting course material and particularly for student interaction with course issues was demonstrated sufficiently to warrant further investigation by other course teams. It is to be regretted that the graduates of this course have no other options within the OU to continue and expand their new expertise in computer communications.

Implications for Tutors

The combination of a new course, covering at least two disciplines, with an MS-DOS workstation as well as a new medium for interacting with students has led to a considerable amount of work for tutors in the first year. Many tutors have given unflaggingly of their time and energy in contributing to the success of the communications package and to supporting students through it. At the moment it appears that more tutors than usual have declined the option to continue tutoring next year. The arrangement of regional conferences in subsequent years is intended to relieve the burden on tutors in addition to its anticipated benefits for students. Although the various regional groups may devise their own sharing of the workload, it is envisioned that tutors will take turns in supporting the academic content of the regional conference and that through the benefit of this larger grouping, students will develop effective self-help mechanisms as was in evidence in the first year in the national help topic.

The range of tutor use of CoSy was as varied as that of the students, namely, from virtually none to almost daily logging on. Some tutors had

free access to CoSy through their place of work, but the reimbursement for 20 hours of connect telephone time, did not nearly compensate some tutors for their out-of-pocket expenses, let alone for their time. However, it was clear that many tutors did enjoy the medium, both as a communications tool and as a new piece of educational technology.

Media Integration

The place and purpose of computer conferencing on this course is understandable and justifiable. However, this model of a very small exploitation of the medium amongst a plethora of other teaching tools can not be recommended for other applications and indeed, was responsible in great part for the little use made of it by the majority of students. Some of the frustrations experienced by tutors and students alike would be considerably reduced if conferencing formed a more significant role in the teaching and delivery of a course. Tutors would have to receive proper recognition for their role in the presentation of the course and all students would be obliged to log on frequently to take the course. The life-blood of a conferencing system is the contributions and interactions of its users. It can integrate with and enhance other teaching media, particularly print, but not when relegated to a 5% stake in a course!

Organizational Implications

The impact of CMC on the organizational structures of the OU has been marginal to date - partly because the full potential of electronic communication has not been exploited in this application. The delivery and management of courses at the OU relies heavily on sending print through the postal system. Although technically possible for students on this course to submit their assignments electronically, this innovation was considered too difficult to manage administratively[1]. Similarily, although some information to students was available on CoSy earlier than in print through the post, this was a duplication rather than a replacement of the print-based system.

The development of the CoSy environment and the design of the OUCom front end were joint ventures of The Technology Faculty, The Academic Computing Service and The Institute of Educational Technology. However, the continued support of the course needs a considerably higher staff allocation than the normal, very small maintenance team. The range of queries and difficulties which arise from 1300 students using communications technology requires an equally wide range of skills to respond adequately. For instance, if students are expecting to find relevant, up-to-date information about the course on the system, then at least one member of the maintenance team must keep abreast of what is happening on the conferences and must input regular messages

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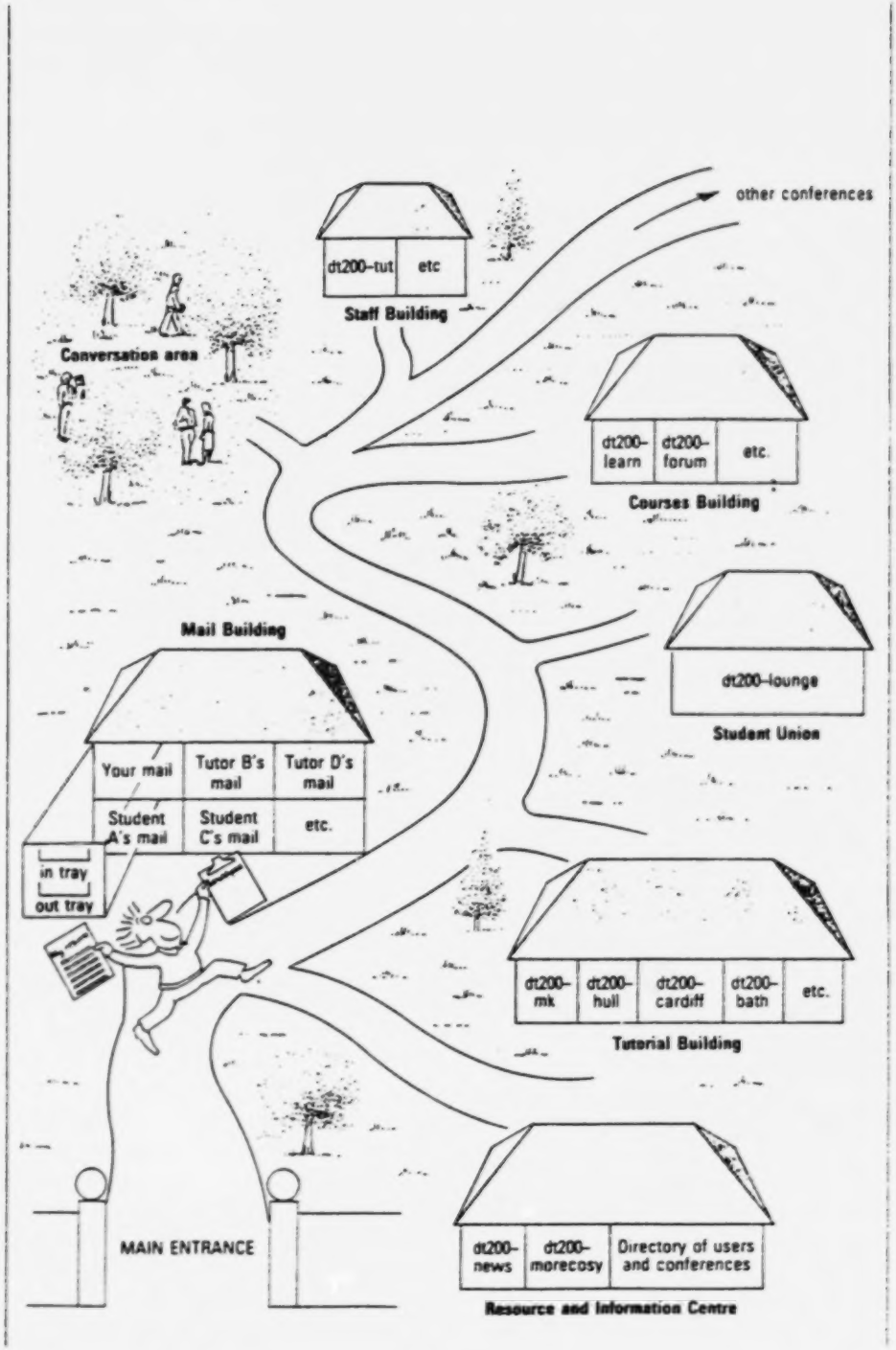
[1]Other reasons for dismissing this possibility were the added costs to students and the inequality for those with technical difficulties.

as required. If aspects of CoSy cause problems, a different person needs to respond. The support for the database requires yet a different person to handle student queries. The conferencing cordinator ID, Coco, needs regular attention by someone knowledgeable in many areas of the course to meet students' needs for quick help and advice. Finally, if the most exciting aspect of the use of conferencing in the first year - the teaching potential - is to continue, then a number of other core members will need to take a leading role in organizing and stimulating on-line discussion. In short, when students are 'admitted' to the centre of the university, the centre is obligated to respond! In the first instance, the course team, the maintenance chairman and the computing service help desk are implicated, but as students learn to rely on this new tool, other administrative services - registration information, payments, exam results, counselling, student records and other services could all be available on-line.

The facility with which academics can receive direct feedback, both positive and negative, from students about materials they have written, has great potential impact on the content and writing styles of academics. Instead of receiving written summaries or reports of survey questionnaires some considerable time after the original writing of the material, course teams can now interact with the 'consumers' of their work. On this first year of the course, students were very candid with their praise and their criticism, in both cases unsolicited! However, this new facility was used intentionally to gather feedback from students for the re-write of the practical work on computer conferencing. Students whose response to the initial opening welcome message from Coco showed signs of poor understanding of commands, were mailed individually asking for detailed follow-up of how they had used the teaching material.

A balanced summary of the impact of CMC on this course in the first year would have to conclude that for the majority of students, tutors and course team members, computer conferencing was an interesting but marginal activity. For the committed or 'converted' minority, however, there is little doubt that this medium was an exciting, innovative and satisfying way of participating in distance teaching and learning.

Appendix 1


other conferences
dt200–tut
etc
Staff Building
Conversation area
dt200–learn
dt200–forum
etc.
Courses Building
Mail Building
dt200–lounge
Student Union
Your mail
Tutor B's mail
Tutor D's mail
Student A's mail
Student C's mail
etc.
in tray
out tray
dt200–mk
dt200–hull
dt200–cardiff
dt200–bath
etc.
Tutorial Building
MAIN ENTRANCE
dt200–news
dt200–morecosy
Directory of users and conferences
Resource and Information Centre

Appendix 2

The following information is taken from the database created by students for their use in the course project. Permission has been obtained from the course team and from students to reproduce parts of it here.

Q 30 What is your occupation?

A housewife	30	I technical	114
B armed forces	20	J skilled trades	22
C admin and managerial	202	K other manual work	10
D education	132	L communications and transport	33
E medical professions	12	M clerical and office	63
F social services	9	N sales and service	29
G science and engineering	80	O retired	22
H other professions and the arts	46	Q. none of these	49

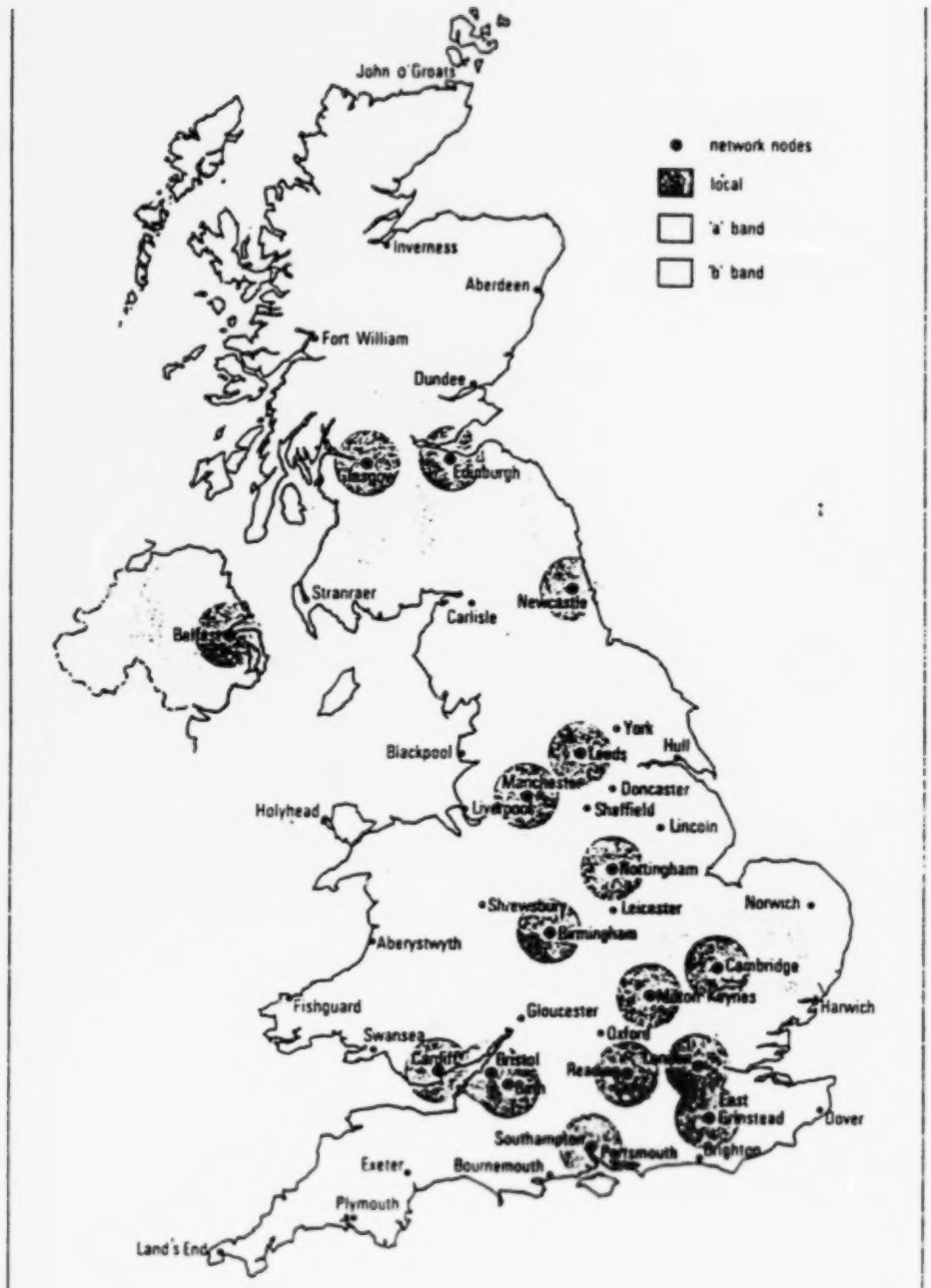
Total: 873

Q 3 Apart from any OU credits you might have, do you have any other educational qualifications?

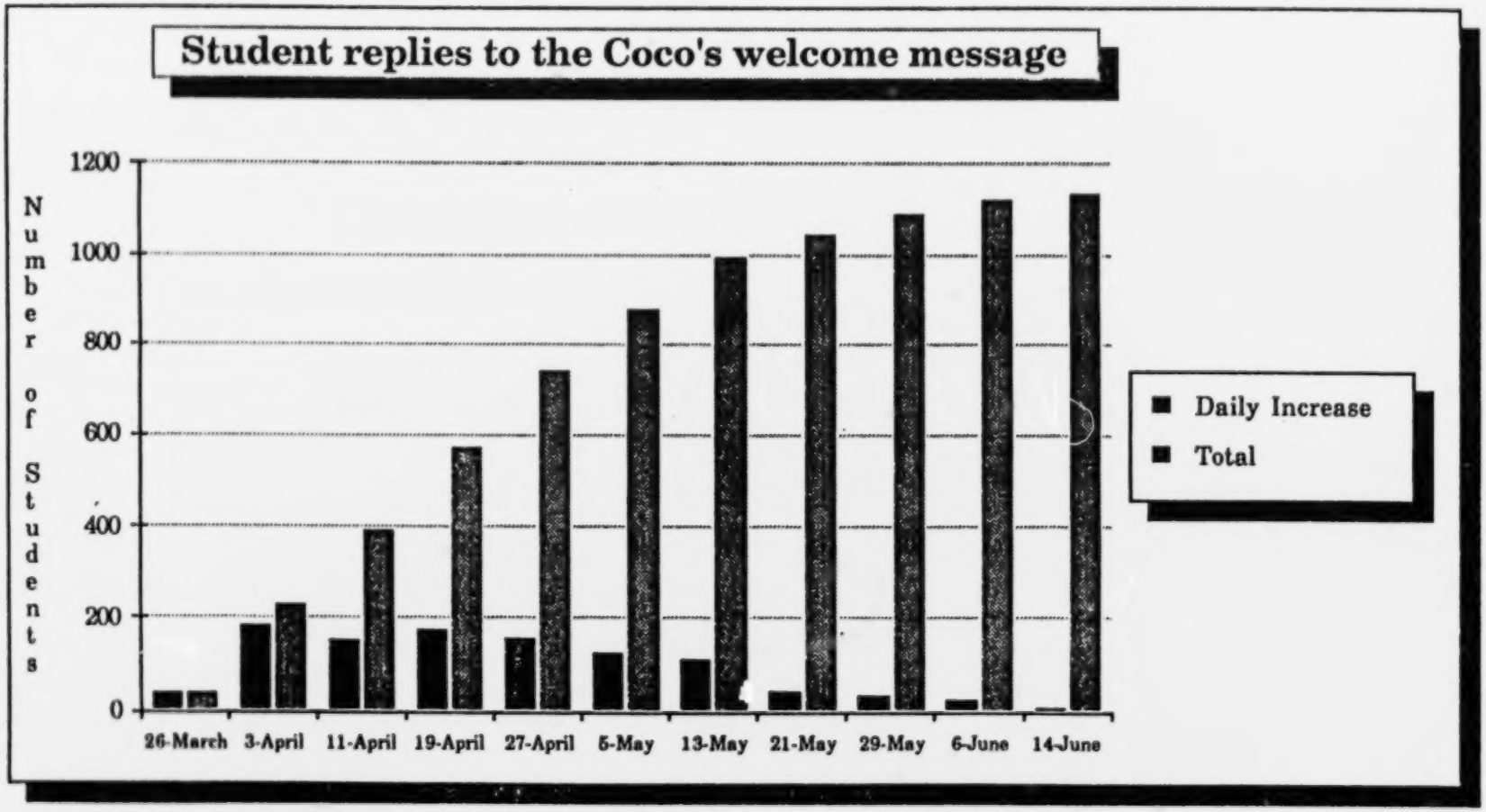
A No formal qualifications	53
B Some qualifications (eg. GCSE, O levels, A levels, OND, etc.)	491
C Higher qualifications (eg. HND, HNC, teaching certificate, degree etc.)	329

Total: 873

Appendix 3


network nodes
local
'a' band
'b' band
John o'Groats
Inverness
Aberdeen
Fort William
Dundee
Glasgow
Edinburgh
Stranraer
Carlisle
Newcastle
Belfast
York
Leeds
Hull
Blackpool
Manchester
Doncaster
Liverpool
Sheffield
Holyhead
Lincoln
Nottingham
Leicester
Norwich
Shrewsbury
Birmingham
Aberystwyth
Cambridge
Milton Keynes
Fishguard
Gloucester
Harwich
Oxford
Swansea
Cardiff
Bristol
Bath
Reading
Canvey
East Grinstead
Dover
Southampton
Portsmouth
Brighton
Exeter
Bournemouth
Plymouth
Land's End

Appendix 4


Student replies to the Coco's welcome message
Number of Students
1200
1000
800
600
400
200
0
26-March
3-April
11-April
19-April
27-April
5-May
13-May
21-May
29-May
6-June
14-June
Daily Increase
Total

Appendix 5

The following table shows the total student usage of CoSy for the first half of the course. Unfortunately 2 weeks of data during this period were lost. Although it is not possible to estimate how much activity has thereby gone unrecorded, the final number of students answering Coco's welcome message show that over 1200 students had logged on at least once by this point. Consequently, 100 students have been removed from the first row - no time on-line - in the table below and are now reported as 'cases missing'.

usage in hours	number of students
none	118
up to 5 hours	486
5 - 10 hours	254
10 - 15 hours	107
15 - 20 hours	41
20 - 30 hours	39
30 - 40 hours	14
40 - 50 hours	11
50 - 100 hours	40
100 - 200 hours	27
more than 200 hours	127

missing cases: 100 **Total 1264 students**

data covers period from Sunday 20th March to July 31st, 1988

Appendix 6

Q 46 If you had difficulties with the computer-mediated communication part of the course that you could not resolve on your own, did you turn to any of the following for help (enter as many codes as apply.):

and

Q 47 If you used any of the above sources of help which was the most helpful?

	help who	most help
A Tutor	230	84
B Fellow student	262	160
C Spouse or partner	103	55
D Your children	27	14
E Non-course friend	50	.10
F ACS telephone help service	225	121
G Colleague at work	86	35
H On-line help messages[1]	376	179
I Other people	33	14
J None of these	194	201

[1]Although this choice was accompanied in brackets by the words (ie typing 'help' or '?'), it would seem reasonable to assume by its position as the most often consulted and the most helpful, that the term 'on-line help messages' was understood by students to include the content of messages in the topics like 'gremlins'

Appendix 7

Messages in DT200 conferences by Sept 20, 1988.

National Conferences:

Dt200-Forum

block00 - 263	block6 - 6	gremlins - 715
block1 - 120	block7 - 5	guidelines - 90
block2 - 164	digest - 13	prac(tical) - 235
block3 - 131	errata - 67	proj(ect) - 254
block4 - 291	exam - 71	tma - 215
block5 - 166	gen - 354	

DT200-Lounge

chat - 607	moans - 92	newconf - 135

DT200-News

block1 - 0	block4 - 1	block7 - 0	practical - 4
block2 - 1	block5 - 1	general - 15	project - 18
block3 - 1	block6 - 0	gremlins - 13	tma - 4

Tutor Conferences

	block	chat	practical	project	tma	other
dt200-aberdeen	7	56	21	12	18	
dt200-acton	4	145	48	25	9	
dt200-ayr	5	24	0	1	1	
dt200-belfast1	2	16	4	4	9	
dt200-belfast2	8	14	0	5	3	
dt200-bolton	11	11	15	13	14	
dt200-bournmth	2	39	24	6	15	
dt200-bradford	10	33	7	4	6	
dt200-brighton	10	32	25	0	3	
dt200-bristol	1	79	17	5	35	
dt200-camb1	8	52	10	3	17	
dt200-camb2	17	34	6	13	9	
dt200-cardiff	34	52	26	50	23	
dt200-chelmsfd	1	22	15	1	5	14
dt200-cotswold	2	88	37	18	20	77
dt200-coventry	30	125	15	24	23	7
dt200-croydon	5	37	3	0	4	
dt200-dundee	12	12	5	5	0	
dt200-edinburg	5	36	21	8	9	5
dt200-eltham	22	40	10	0	16	

	block	chat	practical	project	tma	other
dt200-enfield	29	58	58	32	48	6
dt200-exeter	1	15	2	2	0	
dt200-farnboro	3	35	2	3	5	
dt200-guild1	14	39	12	5	10	11
dt200-guild2	0	16	0	0	0	
dt200-hamilton	2	13	10	0	3	
dt200-harborne	22	69	2	12	19	
dt200-ipswich		33		2	17	
dt200-leeds	3	30	7	0	7	
dt200-leicster	3	6	0	0	1	
dt200-lincoln		7		1		
dt200-liverpl1	9	23	12	8	15	
dt200-liverpl2	0	52	8	0	12	1
dt200-loughton	13	44	23	16	19	
dt200-luton	10	153	21	4	18	6
dt200-maidston	12	31	18	16	2	4
dt200-manch1	4	18	1	0	6	
dt200-manch2	1	51	10	11	12	
dt200-menai	5	25	19	4	7	
dt200-mile end	13	4	4	0		2
dt200-mkeynes	10	60	6	11	27	
dt200-ncastle	4	19	2	0	13	6
dt200-norwich	2	8	0	0	2	
dt200-notting	22	15	9	2	28	17
dt200-oxford	2	30	3	10	3	
dt200-paisley	10	9	13	8	13	
dt200-penrith	14	55	22	10	15	
dt200-plymouth	21	83	40	10	21	38
dt200-portsmth	3	36	12	1	6	
dt200-preston	1	32	1	4	4	
dt200-reading	0	43	3	2	4	
dt200-sheffld	3	32	3	3	5	
dt200-southamp	18	41	24	11	10	
dt200-southend	13	41	2	5	19	
dt200-stirling	4	33	28	8	7	10
dt200-strand	3	30	0	2	0	
dt200-swansea	10	12	10	6	11	
dt200-teesside	0	16	0	1	2	
dt200-tonbridge	15	25	6	8	11	
dt200-wandswth	3	57	23	7	19	144
dt200-westhamp	3	47	11	7	2	
dt200-wolver1	4	15	14	6	37	
dt200-wolver2	3	25	8	4	10	
dt200-york	16	28	6	6	0	

Appendix 8

Use of the Forum Conference

Statistics contributed by Richard Turner, Academic Computing Service

1364 students initially registered

110 students never logged on at all

162 students never entered the Forum conference

728 read but never contributed to the Forum conference

364 individual contributors of at least one message

Topic	No. of different contributors
00	121
1	69
2	67
3	67
4	72
5	55
6	6
7	7
digest	69
errata	33
exam	35
gen	99
gremlins	156
guidelines	34
prac(tical)	92
proj(ect)	86
tma	82

Appendix 9

Analysis of Topic 4 of Forum: Information Technology in Education

Total number of messages sent: 291

Contributed by: 8 members of staff, 9 tutors and 52 students

Roughly 9 identifiably different topics were discussed at length:

1. 71 messages

The late mailing of written material, partly due to the postal strike was discussed most frequently. At times the interchanges became very heated with accusations and justifications for the delay.

2. 53 messages

Tony Bates initiated a discussion asking students to make a case for or against replacing teachers with machines. The debate developed into more general issues of teachers and Information Technology.

3. 23 messages

This was a lively discussion about the merits of interactive video, sparked off by one of the course TV programmes.

4. 21 messages

The use of computers in schools and secondarily of computer communications in schools was initiated by one of the students.

5. 15 messages

The subject of compact disks, topical at the time, received a number of very long and detailed messages from one particular student knowledgeable in the area.

6. 12 messages

The moderator of the Forum introduced a quiz whereby students were asked to identify the author of a particular quotation.

7. 9 messages

The 'Concept Keyboard' was discussed by a number of students who had experience with it.

8. 9 messages

The subject of satellite broadcasting for education was initiated by Tony Bates and developed into a discussion of satellite TV.

9. 8 messages

Tony Kaye requested feedback from users on their attitudes so far, to computer-mediated communication for education.

Appendix 10

Q 49 Do you feel comfortable yet about:

Logging on	yes	843	no	28
Sending mail	yes	691	no	175
Participating in a conference	yes	396	no	479

Q 50 If yes, about how many times did you have to use the system before gaining this confidence?

No of times logged on	1-5	6-10	11-20	21+
Logging on	678	157	23	14
Sending mail	527	165	25	25
Adding to conference	329	123	64	56

N.B. A careful look at these statistics shows that 572 respondents feel confident about participating in a conference - that is 65% of the total number of respondents, but 396 or 45% feel comfortable about contributing to a conference. So it seems that 20% feel confident but not comfortable about contributing. It may be that respondents have interpreted 'comfortable' at a cultural level and 'confident' at a technical level.

Appendix 11

Q 37 Have you had problems in any of the following steps in connecting to CoSy?

	never	occasionally	frequently	total
Modem set up and dialling	576	261	30	867
Dialled but no answer	400	432	26	858
Answered, but no 'connect'	191	608	71	870
Stuck at select service/username	558	267	30	855
Stuck at DT200	649	186	17	852
No carrier after connected	343	460	46	849

N.B. The respondents to this questionnaire, of course, do not include any students who were unable to log on at all, as it was necessary to enter the DT200 environment in order to upload answers into the database.

Appendix 12

DT200 HELP DESK

	-Feb	March	April	May	June	July	Aug	Sept(-8th)	Totals
Setting Up	26	31	6	4	1	0	0	1	69
Disk Drives	4	0	0	1	0	0	0	0	5
Printing	11	23	19	8	2	1	6	2	72
Non-OU	24	29	13	1	3	0	1	1	72
Hard Disk	24	18	6	2	2	0	2	0	54
Other h/w	13	5	5	1	0	1	0	2	27
Floppies	3	10	7	1	1	0	0	0	22
Copying	12	19	1	1	2	0	2	0	37
OU Guide	17	1	0	0	0	0	0	0	18
Modem	14	10	8	6	7	0	3	1	49
Gem	12	14	2	0	1	0	0	0	29
OUCOM	9	18	16	18	9	16	4	0	90
CoSy	2	24	50	53	23	16	7	5	180
VAX contact	6	17	37	28	21	18	6	1	134
General	12	12	2	11	12	9	18	0	76
Course	17	6	16	6	5	2	0	2	54
FVP	4	27	20	11	2	1	0	2	67
DEB	0	0	0	16	74	84	23	6	203
Lotus	0	0	0	0	1	14	91	9	115
KMS	10	5	3	0	1	0	0	1	20
ECCTIS	0	0	0	0	0	1	1	0	2
Survey	0	0	0	0	0	1	0	0	1
Totals	220	269	211	168	167	164	164	33	1396
% All Help Desk Calls	26.6	26.2	38.8	41.9	48.5	44.3	49.9	-	35.9 (Jan-Aug)

CENTRE FOR INFORMATION TECHNLOGY IN EDUCATION

List of CITE Reports

These reports may be obtained from:

Hansa Solanki, Institute of Educational Technology, The Open University, Walton Hall, MILTON KEYNES, MK7 6AA, England.

Report No.	Title and Author
1	A.T. Vincent, (1985) Computing and the Blind.
2	A. Jones, G. Kirkup, J. Morrison (1985) A Trial of Home Based Computer Terminals.
3	Gill Kirkup, (1985) The Present and Potential Use of Ceefax in the Open University.
4	Mark Elsom-Cook, (1986) Artificial Intelligence and Computer Assisted Instruction.
5	Mark Elsom-Cook, (1986) A Pascal program checker.
6	Simon Holland, (1986) How computers are used in the teaching of music and speculations about how Artificial Intelligence could be applied to radically improve the learning of composition skills.
7	Simon Holland, (1986) Design consideration for a human-computer interface using 12-tone three-dimensional harmony space to aid novices to learn aspects of harmony and composition.
8	Alison Petrie-Brown, (1987) The Influence of Context and Coherence as a Foundation for Dialogue Research.
9	Eileen Scanlon, Randall B. Smith (1987) A Rational Reconstruction of a Bubble Chamber Simulation Using The Alternate Reality Kit.
10	Mark Elsom-Cook, (1987) Intelligent Computer-Aided Instruction research at the Open University.
11	Mark Elsom-Cook, (1987) Towards a framework for human-computer discourse.
12	Mark Elsom-Cook, (1987) MATILDA AND IMPART: Lisp tools.
13	Mark Elsom-Cook, (1987) Guided discovery tutoring and bounded user modelling in Intelligent Computer Aided Instruction ed. J. Self, Chapman-Hall 1987.
14	A.M. Petrie-Brown and M.T. Elsom-Cook, (1987) An Examination of an AI model of indirect speech acts.
15	A. Edwards, (1987) Integrating Synthetic Speech With Other Auditory Cues In Graphical Computer Programs For Blind Users.
16	S. Holland, (June 1987) A knowledge-based tutor for music composition.

17 S. Holland, (June 1987) New Cognitive Theories of Harmony Applied To Direct Manipulation Tools for Novices.

18 M. Baker. (July 1987) Intelligent Computer-Aided Instruction and Musical Performance Skills.

19 M. Baker, (August 1987) Proposed Research Directions for Intelligent Computer-aided Instruction in Musical Performance Skills.

20 A D N Edwards, (August 1987), Adapting interfaces for visually disabled users.

21 M Elsom-Cook, (September 1987), Acquisition of computing skills.

22 M. Baker, (September 1987), Computational Analysis of musical grouping structures.

23 M Baker, (June 1987), Automated Analysis of Musical Grouping Structures as a Basis for a Guided Discovery Environment for Interpretation of Music.

24 D Laurillard, (October 1987), The different forms of learning in psychology and education.

25 A.D.N. Edwards, (November 1987) Modelling blind users" interactions with auditory computer interface.

26 P. Fung, (November 1987) Novice Prolog Programmers.

27 P. Fung, B. DuBoulay & M. Elsom-Cook, (November 1987), An initial taxonomy of novices' misconceptions of the Prolog interpreter.

28 G. Kirkup, (November 1987), Considering the effect on women students of an increased use of microcomputers in distance education.

29 Sara Hennessy, Rick Evertsz, Dave Ellis, Phil Black, Tim O'Shea, Ann Floyd, Design Specification for 'Shopping on Mars' a computer-based Educational Activity.

30 A D N Edwards, The Use of home computers by disabled students at the Open University. Part 1: Previous use of computers in courses

31 Michael E. Fox (March 1988) A Report on Studies of Motivation, Teaching and Small Group Interaction with special reference to Computers and to the Teaching and Learning of Arithmetic.

32 Michael E. Fox (March 1988) Theory and Design for a Visual Calculator for Arithmetic.

33 M. Baker (February 1988) A Cognitive Model for Perception of Musical Grouping Structures

34 M. Baker (February 1988) An Artifical Intelligence Approach to Musical Grouping Analysis

35 P. Fung (December 1987) Novices' predictions of Prolog's control flow: A report on an empirical study

36 M. Elsom-Cook and F. Spensley (April 1988) Knowledge representation in a tutoring system for procedural skills.

37 F. Spensley & M. Elsom-Cook (April 1988) Dominie: Teaching and Assessment Strategies.

38 M. Baker (May 1988) Tutoring with Incomplete and Uncertain Knowledge

39 R. Moyse (May 1988) Multiple Viewpoints for Intelligent Tutoring Systems.

40 P. Whalley (May 1988) Hyper Technic - a graphic object-oriented control environment.

41 P. Whalley (June 1988) Cued recall as a Measure of argument integration.

42 L. Alpay (June 1988) A Survey and Examination of Intelligent Tutoring Systems in Medicine

43 M. Elsom-Cook (July 1988) Introduction to the ECAL system.

44 F. Spensley (July 1988) Dominie: Trainer Interface.

45 M. Baker (July 1988) An Architecture of an Intelligent Tutoring System for Musical Structure and Interpretation.

46 E.Scanlon and R.Sibbitt (April 1988) Proceedings of CAL Conference 88.

47 L. Alpay (September 1988) Medical Problem-Solving and Intelligent Tutoring Systems: Proposed Research Directions.

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51 M. Baker, (October 1988) Arguing with the tutor: a model for tutorial dialogue in uncertain knowledge domains.

52 (October 1988) Information Technology in Education: Conceptual change in Science.

53 T. O'Shea, C. O'Malley & E. Scanlon (October 1988) Magnets, Martians and Microworlds: Learning with and Learning by OOPS.

54 (November 1988) Directory of Research 1988.

55 P. Fung (November 1988) Automated Diagnosis of Prolog control flow errors: a first evaluation.

56 R. Mason (December 1988) The use of Computer-Mediated Communication for Distance Education at the Open University, 1988.